

WHAT IS CLAIMED IS:

Sub A 1. A dry etching method comprising the step of:
dry-etching tungsten with mixed gas containing fluorine gas, chlorine or hydrogen bromide, oxygen and nitrogen.

2. A dry etching method according to claim 1, wherein said fluorine gas has a structure that a ratio of fluorine atoms with respect to elements of the gas molecule except for fluorine is four or less (when the composition of the fluorine molecule is M_xF_y , $Y/X \leq 4$ where M is an element except for fluorine atom and F is fluorine).

3. A dry etching method according to claim 2, wherein said fluorine gas has a structure that the total number of fluorine atoms in elements constituting said gas molecule is four or less and a carbon atom is contained.

4. A method of manufacturing a semiconductor apparatus comprising the steps of:

Sub 7 laminating upwards a polycrystal silicon film or an amorphous silicon film, a tungsten nitride film or a titanium nitride film and a tungsten film on a silicon substrate; and

dry-etching said tungsten nitride film or said titanium nitride film and said tungsten film with mixed gas containing fluorine gas and chlorine or hydrogen

bromide, oxygen and nitrogen so that a gate electrode is formed.

Sub E1 5. A method of manufacturing a semiconductor apparatus according to claim 4, wherein said gate electrode is formed by dry-etching said polycrystal silicon film or said amorphous silicon film with gas which does not contain fluorine.

Sub A2 6. A method of manufacturing a semiconductor apparatus according to claim 4, wherein a mask is formed by silicon oxide or silicon nitride to perform dry etching.

7. A method of manufacturing a semiconductor apparatus according to claim 4, wherein said fluorine gas has a structure that a ratio of fluorine atoms with respect to elements of the gas molecule except for fluorine is four or less (when the composition of the fluorine molecule is M_xF_y , $Y/X \leq 4$ where M is an element except for fluorine atom and F is fluorine).

8. A method of manufacturing a semiconductor apparatus according to claim 7, wherein said fluorine gas has a structure that the total number of fluorine atoms in elements constituting said gas molecule is four or less and a carbon atom is contained.